

# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

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Instruction Memorandum No. NV-2006-065  
Expires: 9/30/07

To: Field Managers, Nevada

From: State Director, Nevada

Subject: Groundwater Modeling Guidance for Mining Activities

The use of groundwater models at mine operations is widely practiced for analyzing water resource impacts, mine operations, and mine closures. Groundwater-flow and fate and transport models have been utilized to evaluate numerous hydrogeologic conditions. Groundwater flow models are used to calculate the groundwater flow rate, quantity, and direction of movement of groundwater through aquifers and confining units in the subsurface. Fate and transport models estimate the association/disassociation of concentrations of chemicals in groundwater, and evaluate the rate of movement, concentrations, and pathways.

### **Purpose**

The use and protection of water resources is an important environmental and economic issue. As mining has the potential to have significant quality and quantity impacts to the State of Nevada water resources, it is important and necessary that the Bureau of Land Management (BLM) adequately address water resource concerns through National Environmental Protection Act (NEPA) analysis as an integral part of Plans of Operation (POOs) approvals. Groundwater and fate and transport models are useful tools to aid in the NEPA evaluation of potential impacts from mining.

It is necessary that the BLM adequately address water resource concerns in the review of all proposed Mining POOs conducted under 43 CFR Subparts 3802 and 3809 - Surface Management Regulations. The goals of this policy are:

- To ensure the continued health of the land and water resources
- To ensure the use of good science in making informed decisions
- To collaborate with appropriate Federal, State, local and tribal agencies and other interested parties

### **Policy**

This guidance is intended to focus specifically on groundwater modeling, conceptual design and evaluation processes. The Nevada BLM Groundwater Modeling Guidance for Mining Activities requires that groundwater resource investigations involving groundwater modeling, at a minimum, meet protocols

outlined in this policy. This guidance will ensure that a consistent approach is followed for groundwater modeling studies and reports required to meet POO and NEPA standards.

It is also the policy of the Nevada BLM to collaborate with the appropriate State regulatory agencies, specifically, Nevada Department of Conservation and Natural resources (NDCNR), Division of Environmental Protection (NDEP) and Division of Water Resources (NDWR). In certain situations, BLM may evaluate potential impacts at a level of detail or breadth of analysis that exceeds State requirements. For example, the BLM might require a detailed groundwater model analysis associated with each mining alternative as proposed within the NEPA document. Such departures should be coordinated with the appropriate State agency.

### **Implementation**

This Instruction Mermorandum should be followed when developing groundwater investigative studies in support of NEPA documents and POO approvals. Attachment 1 "Nevada Bureau of Land Management Groundwater Modeling Guidance for Mining Activities" is intended as a flexible document to aid in meeting requirements of this policy. Also included is a glossary of useful terms pertinent to groundwater hydrology and modeling and a table of relevant references on groundwater modeling.

### **Contact Person**

Questions concerning this policy and the attached guidance document should be directed to Dr. Tom Olsen, BLM Nevada State Office, Division of Minerals Management at (775) 861-6451.

Signed by:  
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State Director, Nevada

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1 - Attachment

1 - Nevada Bureau of Land Management Groundwater Modeling Guidance For  
Mining Activities (30 pp)

Separate Cover:  
Figures 1 - 14

